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Title: The Perspectives of Physiotherapists in Canterbury on the use of Electronic Health Records

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Keywords: electronic health records; perspectives; attitudes; physiotherapist; implementation.

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Abstract: Question:
What are the perspectives of New Zealand Registered Physiotherapists (NZRPs), who are Canterbury-based, on the implementation and use of electronic health records (EHRs)?

Design:
A cross-sectional survey was designed for participants to complete over a three month period. The data collected consisted of the participants' sociodemographic profiles, perspectives, and influential factors that may affect their perspectives on EHRs. Descriptive statistics, chi-square statistics, and content analysis were performed for the qualitative and quantitative data.

Participants:
A non-randomised convenience sample of Canterbury-based NZRPs (n = 132) were recruited through email from the Canterbury Branch of Physiotherapy New Zealand, the Canterbury District Health Board, and the private physiotherapy clinics of Canterbury registered in the Yellow Pages online directory.

Outcome measures:
Perspectives on the advantages and disadvantages of EHRs.

Results:
The majority of participants support the idea of a universal EHR system in New Zealand. Most participants were not aware of the Government's strategic plan for a universal EHR system. A higher proportion of participants working in the private health sector agreed with the advantages and disadvantages of EHRs than did their public health sector counterparts. The participants' education backgrounds and age were not significant determinants on their perspectives on EHRs. Participants have positive attitudes towards EHRs, but have several concerns on its use including resource concerns, side effects, potential misuse, and its complex nature.

Conclusion
Communication and involvement of NZRPs with other stakeholders in the design, implementation, and use of a EHR system are vital to its success and acceptance by NZRPs.

Suggested Reviewers:

Opposed Reviewers:

Title: The Perspectives of Physiotherapists in Canterbury on the use of Electronic Health Records

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The Perspectives of Physiotherapists in Canterbury on the use of Electronic Health Records

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Declarations of interest: none

Key words: electronic health records; perspectives; attitudes; physiotherapist; implementation.

Abstract

Question

What are the perspectives of New Zealand Registered Physiotherapists (NZRPs), who are Canterbury-based, on the implementation and use of electronic health records (EHRs)?

Design

A cross-sectional survey was designed for participants to complete over a three month period. The data collected consisted of the participants' sociodemographic profiles, perspectives, and influential factors that may affect their perspectives on EHRs. Descriptive statistics, chi-square statistics, and content analysis were performed for the qualitative and quantitative data.

Participants

A non-randomised convenience sample of Canterbury-based NZRPs (n = 132) were recruited through email from the Canterbury Branch of Physiotherapy New Zealand, the Canterbury District Health Board, and the private physiotherapy clinics of Canterbury registered in the Yellow Pages online directory.

Intervention

Not applicable

Outcome measures

Perspectives on the advantages and disadvantages of EHRs.

Results

The majority of participants support the idea of a universal EHR system in New Zealand. Most participants were not aware of the Government's strategic plan for a universal EHR system. A higher proportion of participants working in the private health sector agreed with the advantages and disadvantages of EHRs than did their public health sector counterparts. The participants' education backgrounds and age were not significant determinants on their perspectives on EHRs. Participants have positive attitudes towards EHRs, but have several

concerns on its use including resource concerns, side effects, potential misuse, and its complex nature.

Conclusion

Communication and involvement of NZRPs with other stakeholders in the design, implementation, and use of a EHR system are vital to its success and acceptance by NZRPs.

Introduction

Traditionally, paper-based health records (PHRs) have been used in healthcare settings; however, through the advancements of information technology (IT), electronic health records (EHRs) have since been generally accepted as the best way to store patient medical data.[1] The Healthcare Information and Management Systems Society (HIMSS) define an EHR as "a longitudinal electronic record of patient health information produced by encounters in one or more care settings. The health information includes patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data, and radiology reports" [2]. The advantages of EHRs have the potential to improve overall patient health outcomes through an enhanced quality of care.[1, 3, 4, 5]

Following the release of the Health Information Strategy in 2016, the New Zealand Government has established the Digital Health 2020 strategic plan which aims to "progress the core digital technologies presented in the New Zealand Health Strategy" [6] under carefully planned digital investments in its health sector. One of its five core components is to achieve a universal EHR throughout New Zealand for its citizens.[7] By following this government-developed framework, the Ministry of Health intends their goals to come to fruition by the year 2020.

In order for health IT systems such as EHRs to be successful, it is important for end-user healthcare providers to be involved in the implementation process. Examples and studies from other countries such as Australia and England have proven the importance of this point.[3, 8] Within New Zealand, there has been limited research published for physiotherapists and the other health professionals in allied health on their perspectives, let alone involvement, on EHRs.

The lack of insight into what NZRPs perceive on EHRs will ultimately affect how successful Digital Health 2020 will be when the plan's universal EHR system is introduced nationally. NZRPs must have the desire to adopt the universal EHR system into their everyday practices following its imminent introduction in the future. Understanding the preferences of NZRPs through research will help create an EHR system that is attractive to them thereby increasing their EHR adoption rates. Failure to understand their perspectives could prove to be a costly lesson for New Zealand's publicly funded health system. Addressing this situation and identifying the perspectives of the physiotherapy profession on EHRs will provide a vital piece of information to guide Digital Health 2020 and the New Zealand Government towards a better future. This study is the first conducted in New Zealand where specific emphasis is placed on investigating the knowledge and perspectives that physiotherapists have on EHRs.

Therefore, the research question for this study was:

What are the perspectives of NZRP participants, who are Canterbury-based, on the use and implementation of EHRs?

Methods

Study Protocol

Approval for this research was granted on 5 May 2017 by the University of Canterbury's Human Ethics Committee. Ref: HEC 2017/16/LR (see Appendix 1). Table 1 presents a research design flowchart that details the different processes taken to complete this research.

Research Design Flowchart

Table 1: The Research Design Flowchart

Recruit subjects (n = 132): NZRPs who identify as working or living in Canterbury
↓
Survey design: use of Qualtrics software, an online survey design tool
↓
Survey refinement: continuous refinement with the university research support team to check for the overall design and standard with modifications made where necessary
↓
Pilot test of the online survey: NZRPs who were not research participants were asked to take the survey and check for wording and understandability with modifications made where necessary based off of their feedback
↓
Research administered and distributed: online survey distributed through Qualtrics software by Physiotherapy New Zealand, Canterbury District Health Board, and the researcher
↓
Collection of data: Collection and follow up of completed surveys
↓
Aggregate and cleaning of the collected data for analysis using International Business Machines Corporation (IBM) Statistical Package for the Social Sciences (SPSS) (version 24) software
↓
Analysis of data: descriptive statistics, frequencies, and cross-tabulations for all relevant variables related to the research question
↓
Results: production of meaningful results through scientific analysis of data
↓
Discussion and limitations of the research were produced
↓
Conclusion and further recommendations from the study

Recruitment

Participants were recruited from the Canterbury Branch of Physiotherapy New Zealand, Canterbury District Health Board, and registered physiotherapy clinics in the Yellow Pages online directory. The recruitment emails, which contained the link to the online survey, were sent out twice during the three-month data collection period (11 May 2017 - 11 August 2017).

Survey Design

The survey was formulated through the Qualtrics software, an online survey design tool. The survey was separated into four different sections with each section having a similarity in the types of questions that were presented (see Appendix 2 for full survey). The four sections were:

1. "The Electronic Health Record" and the perspectives of the participants (Questions 1 to 7).

2. "Computer Usage Information" provides insight into the amount and type of computer usage (Questions 8 to 12).

3. "Current Practising Information" identifies which sectors the participants are practising in and their satisfaction towards their current health record information system (Question 13 to 16).

4. "Physiotherapist Sociodemographic Information" recognises the specific backgrounds of each participant demographically, and socially (Questions 17 to 23).

5. And finally Question 24, an open-ended question that allows participants to report any thoughts in regard to the survey, EHRs, and health IT in general.

Data Analysis

The analysis was undertaken using the IBM Statistical Package for the Social Sciences (SPSS) (version 24) software. Cross-tabulations were performed between variables of interest to explore potential associations which addresses the study's research question. Microsoft Excel and its data computing formulae were used to perform calculations to determine whether the results would be statistically significant within a 95% confidence interval. If the level of significance is above 0.05, then the relationship would be concluded as not statistically significant.[9]

Inductive content analysis was performed on the survey's qualitative data when participants were given the opportunity to report any opinions on the research topic. This approach involves the analysis of data from specific or similar words into broader umbrella themes.[10] Qualitative data from the survey were coded, grouped, and categorised into conceptual themes that represents the attitudes of the participants on EHRs and health IT.

Results

A total of 132 participants completed the survey out of the 762 invitations that were sent throughout Canterbury. This represents a response rate of 17.3% while taking into account that the participants recruited from different population groups are likely not mutually exclusive, and that registered physiotherapy clinics in the Yellow Pages online directory are likely to have more than one NZRP who may also work in multiple clinics during the study's data collection period.

Sociodemographic Characteristics

The participants are predominantly female (77%) with a mean age of 43 years. The majority of participants self-reported New Zealand European ethnicity (81%), followed by Asian (4%), Maori (2%), Pacific Islander (1%) and other ethnicities (13%). Almost half (49%) of the participants have either a Diploma in Physiotherapy or Bachelor of Physiotherapy compared to the other 68 participants (51%), who have postgraduate qualifications.

Over half of the participants (56%) solely use EHRs in their practices as physiotherapists, a minority of participants (12%) use PHRs, and 32% of participants use a mix of both types. Over two-thirds (69%) of participants were working in the private health sector, 22% of participants were working in the public health sector, and only 9% of participants were working in both sectors.

The Participants' Perspectives on the Implementation and Use of a Universal EHR

A large proportion of the participants (92%) support the idea of a universal EHR that can be used by healthcare providers throughout New Zealand; however, the Government and its formal support, training, and funding behind this idea is a major influential factor for the

commitment of participants. Ninety-five percent of participants report being committed to the idea of a universal EHR, when there is formal support, compared to 9% support if there were to be no formal support.

There is a strong association ($p < 0.001$) between whether the participants work in the public or private health sector and their satisfaction with the current health record system used in their practices as NZRPs (see Table 2). A higher proportion of participants working in the private health sector (61%, which is 54 of 88) were more satisfied with their current health record information system compared to participants working in the public health sector (14%, which is 4 of 28). This shows a statistically significant difference in perspectives among the participants on EHRs depending on where they work in the healthcare industry.

Table 2: The statistical values between which health sector the participants work in and their satisfaction with the health record system used in their work

x1	n1	x2	n2	p1	p2	p1-p2	sd(p1-p2)
54	88	4	28	0.613	0.143	0.471	0.084

95% CI	95% CI		
lower bound	upper bound	z score	p-value (2 tailed)
0.306	0.636	5.600	0.000

x1 is the number of participants working in the private health sector who are satisfied with their current health record system

n1 is the total number of participants working in the private health sector

x2 is the number of participants working in the public health sector who are satisfied with their current health record system

n2 is the total number of participants working in the public health sector

The Participants and the New Zealand Government's Digital Health 2020 Strategic Plan

Only 37 participants (29%) have heard of Digital Health 2020, eight participants (6%) cannot remember if they have heard of the strategic plan, and 84 participants (65%) have never heard of Digital Health 2020.

The Educational Backgrounds of Participants and their Support towards a Universal EHR

Forty-nine percent of the participants have an education level of Bachelor's Degree or below while 51% of the participants have an education level of Postgraduate Certificate or above. A higher proportion of participants (93%) with an education level of a Postgraduate Certificate or above support the idea of a universal EHR, that will be used by healthcare providers throughout New Zealand, compared to participants with an education level of a Bachelor's Degree or below (90%), but this difference did not reach statistical significance, χ^2 (2, N = 131) = 2.22, p = 0.329. There is, therefore, a weak association between the educational backgrounds of participants and their support for a universal EHR.

The Perspectives among Participants who use Computers more frequently in their Work Environment compared to those who do not

Almost all of the participants (99%) use computers for work on a daily basis. Sixty percent of participants use computers at work for three hours or less each day and 40% use computers at work for more than three hours each day. There is a weak association, χ^2 (2, N = 130) = 2.72, p = 0.257, between the amount of computer usage among participants and whether or not they support the idea of a universal EHR that will be used by healthcare providers throughout New Zealand.

What do Participants Perceive as Advantages and Disadvantages of using EHRs?

The participants perceive “integration”, “timely”, and “communication” as the top advantages of using EHRs but not “evaluation”, “multiple copies”, or “calculation” (see Table 3 and Table 4). Age was not a major determinant as there was little variation between the different age groups of participants and their perception of the advantages of using EHRs.

Table 3: The key table for the summary words used in the results and analysis section that represents the different advantages of EHRs

	Summary Words	Complete Sentences of the Advantages
Advantages	Integration	Provide integrated healthcare across different healthcare locations
	Accessibility	Be accessed anytime and anywhere by healthcare professionals involved in the direct care of patients
	Evaluation	Effectively evaluate the quality of the care provided
	Calculation	Efficiently calculate the cost of the care provided
	Communication	Allow healthcare providers of different professions to communicate with each other
	Timely	Save time on locating and retrieving health information and patient charts
	Multiple Copies	Provide more than one copy of the same patient information at any given time
	Clear Reading	Nullify the difficulties that healthcare professionals may have on reading each other's unique handwritings that may often be unintelligible
	Electronic Footprint	Determine who had access (an electronic footprint) to which patient health information by requiring each user to be registered to the electronic health record
	Security	Provide security to sensitive health information through password authentication processes

Table 4: What NZRP participants perceive as advantages of using EHRs

		Agree		Disagree	
		n	Percentage	n	Percentage
Advantages	Integration	125	95.4	6	4.6
	Timely	124	94.7	7	5.3
	Communication	123	93.9	8	6.1
	Accessibility	119	90.8	12	9.2
	Clear Reading	89	67.9	42	32.1
	Security	79	60.3	52	39.7
	Electronic Footprint	78	59.5	53	40.5
	Evaluation	54	41.2	77	58.8
	Multiple Copies	48	36.6	83	63.4
	Calculation	45	34.4	86	65.6
	Total	884		426	

The participants perceive “insecurity”, “incorrect recording”, and “inflexibility” as the main disadvantages of using EHRs whereas “ongoing cost”, “vendor access”, and “extra cost” were less agreed upon as disadvantages (see Table 5 and Table 6). Although age accounted for some variation in participant perceptions about the disadvantages of using EHRs, an overall chi-square test between the age group the participants belong to (23 to 34 years, 35 to 49 years, or 50 to 75 years), and whether or not participants agreed with the eight listed disadvantages of EHR use, indicated a lack of statistical significance between the two variables, χ^2 (16, N = 124) = 24.2, p = 0.086.

Table 5: The key table for the summary words used in the results and analysis section that represents the different disadvantages of EHRs

	Summary Words	Complete Sentence of the Disadvantage
Disadvantages	Extra Cost	Extra cost of additional resources such as money and time to train healthcare professionals to use electronic health records
	Non-acceptance	Lack of acceptance by healthcare professionals who choose not to use electronic health records
	Ongoing Cost	Ongoing cost to maintain the required software and hardware to keep the electronic health system up to date
	Inflexibility	Lack of autonomy and flexibility for healthcare professionals to record health records the way they want to rather than the set rigid structured format of the electronic health record
	Insecurity	Potential threat of security breaches by hackers or malicious software that can access sensitive healthcare information from anywhere
	Incorrect Recording	Possibility of recording wrong healthcare information due to operating the electronic system incorrectly
	Unjustified Access	Healthcare providers can access healthcare information of patients who are not in their direct care
	Vendor Access	Non-healthcare providers who produce, maintain, and service the electronic health record system will have access to sensitive health information when working on the system

Table 6: What NZRP participants perceive as disadvantages of using EHRs

		Agree		Disagree	
		n	percentage	n	percentage
Disadvantages	Insecurity	106	82.2	23	17.8
	Incorrect Recording	74	57.4	55	42.6
	Inflexibility	68	52.7	61	47.3
	Unjustified Access	68	52.7	61	47.3
	Non-acceptance	62	48.1	67	51.9
	Ongoing Cost	52	40.3	77	59.7
	Vendor Access	44	34.1	85	65.9
	Extra Cost	42	32.6	87	67.4
	Total	516		516	

The Attitudes that Participants have towards EHRs and Health IT

Five different themes emerged through content analysis of the opinions that the participants report having on EHRs and health IT (see Table 7). These five themes were produced through examining 19 relevant responses provided by participants who answered the specific question. The themes were:

- Support remarks,
- Resource concerns,
- Complex nature,
- Side effects,
- Potential misuse

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321 Table 7: Content analysis of the participants' attitude towards EHRs and health IT

Summary Words of Theme	Theme Definition	Frequency
Supportive Remarks	Participants express their support towards the Government's strategic plan for a universal EHR	8
Resource Concerns	Participants express their concerns about the additional resources required to keep EHRs operating efficiently and safely	5
Complex Nature	Participants express their concerns about the complex nature of producing a universal EHR suitable for all key stakeholders with different interests in mind	4
Side Effects	Participants express their concerns about the side effects of operating EHRs through computers which may create chronic work-related injuries or health issues	1
Potential Misuse	Participants express their concerns about the potential misuse of the conveniently accessible EHR data by key stakeholders	1

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Discussion

Canterbury-based NZRP participants have predominantly positive perspectives on the implementation and use of EHRs. Almost all (92%) of the sample participants support the idea of a universal EHR that can be used by healthcare providers throughout New Zealand, 7% are indifferent, and only 2% reject the idea. These findings were expected because the literature has reported the usefulness and effectiveness of EHRs in healthcare settings and health professionals largely welcome its introduction into their workplace environments.[1, 3, 11, 12]

In their study, Greenhalgh et al. (2008) argued that in Britain the successful implementation of an EHR requires adequate educational, monetary, and time support for end-users of the system.[8] This includes health professionals from the nursing, medicine, and allied health professions. Formal support in the form of promoting and then educating about EHR systems to the general public and cooperating with educational institutions that train physiotherapists is an important aspect for the general public and future physiotherapists to develop a commitment towards EHR system adoption.[1] In the literature review conducted by Vreeman et al. (2006), a lack of formal training, a lack of time to modify workflow behaviour, and a lack of funds to purchase software or hardware ultimately hindered physiotherapists from implementing EHRs into their practices.[13]

The findings support the claim that many participants, and likely many NZRPs across New Zealand, are not aware of Digital Health 2020 and its five core components to improve digital capabilities in healthcare. Greater awareness and subsequent involvement by NZRPs in the strategic plan will potentially increase the likelihood of a smoother transition in the digital transformation of New Zealand's healthcare. This can be achieved through setting aside

budget to support NZRPs and raising incentives for their involvement in the process. Further research into this recommendation is desirable for the future implementation of EHRs and may benefit the physiotherapy profession internationally.

Although literature has consistently described “integration”, “timely”, and “communication” as advantages of using EHRs, they also described “evaluation”, “multiple copies”, and “calculation” as advantages of using EHRs, which the participants did not perceive as advantages of using EHRs.[14, 15, 16, 17, 18] Differing perceptions of the advantages of EHRs by the participants was expected but having more than half of the participants not perceive some of the listed advantages as advantages of using EHRs was unexpected because the listed advantages in the survey were formulated from the literature reviewed for this project. The conclusion might be drawn that the participants were familiar with and exposed to some of the advantages of using EHRs, but not all of it.

Similar observations were found for the perceptions of participants on the disadvantages of using EHRs. Privacy and confidentiality concerns as to whether many web-based EHR systems will be secure, and not breached by hackers or malicious software, has always been a heated topic of discussion because medical records can be illegally accessed through the Internet without needing offenders to physically be near healthcare facilities for the offence to occur.[14, 19, 20, 21] Together, Government’s strategies that ensure the security of patient health data and literature that describes the potential threats from hackers on EHR systems, combined with media reports of EHR systems breaches by malicious software are likely to contribute to the perception by participants that “insecurity” is the biggest disadvantage of using EHRs in their clinical practices.[14, 19, 20, 21, 22, 23]

For policy makers and champions of Digital Health 2020, ensuring the involvement of physiotherapists and other health professionals is vital for the successful implementation and use of an EHR – one that is accepted by end-user health professionals and willingly adopted in healthcare facilities. For health professionals, and the governing bodies of their professions, there is a need to identify the different perspectives that health professionals from different professions will have on the implementation and use of EHRs. Lastly, individual NZRPs and Physiotherapy New Zealand, as a societal organisation for physiotherapists, should work to advocate, educate, and provide informative services on the Government's incoming EHR system, and health IT in general, to raise the level of awareness and knowledge that physiotherapists have on EHRs.

In conclusion, Canterbury-based NZRPs appear to be supportive for the implementation and use of a universal EHR system. They are aware of its general advantages and disadvantages which have been described in the literature. The Government will need to involve NZRPs in the planning of the universal EHR system as well as improve their communication with NZRPs to ensure both parties are aware of each other's intentions and perspectives. Ultimately, formal support following the release of the Government's universal EHR system will be the key to maintaining the positive perspectives that NZRPs have on EHRs.

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Appendices

Appendix 1: Research Approval Letter from the Human Ethics Committee

HUMAN ETHICS COMMITTEE
Secretary, Rebecca Robinson
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Email: human-ethics@canterbury.ac.nz

UNIVERSITY OF CANTERBURY
Te Whare Wānanga o Waitaha
CHRISTCHURCH NEW ZEALAND

Ref: HEC 2017/16/LR

5 May 2017

Cheng-Wei Chen
School of Health Sciences
UNIVERISTY OF CANTERBURY

Dear Cheng-Wei

Thank you for submitting your low risk application to the Human Ethics Committee for the research proposal titled *"The Perspectives of Physiotherapists in Canterbury on the use of Electronic Health Records"*

I am pleased to advise that this application has been reviewed and approved.

Please note that this approval is subject to the incorporation of the amendments you have provided in your email of 28 April 2017.

With best wishes for your project.

Yours sincerely

R. Robinson

pp.
Associate Professor Jane Maidment
Chair, Human Ethics Committee

Appendix 2: Survey for the Perspectives of Physiotherapists in Canterbury on the use of Electronic Health Records

SECTION 1 OF 4: THE ELECTRONIC HEALTH RECORD (EHR)

The Healthcare Information and Management Systems Society (HIMSS) define an Electronic Health Record as "**a longitudinal electronic record of patient health information produced by encounters in one or more care settings. The health information includes patient demographics, progress notes, problems, medications, vital signs, past medical history, immunizations, laboratory data, and radiology reports**" (HIMSS, 2013, p. 259).

Reference:

HIMSS. (2013). *Dictionary of Healthcare Information Technology Terms, Acronyms and Organizations* (Third ed., pp. 259-262). Chicago, IL: The Healthcare Information and Management Society.

1. **Would you support the idea of a universal electronic health record that will be used and accessed by healthcare providers from all of New Zealand?**
   Please circle one answer.

   - Yes
   - No
   - Neither yes or no

2. **Have you heard about the government's Digital 2020 strategic plan where they aim to introduce a universal electronic health record that can be used and accessed by healthcare providers from all of New Zealand?**
   Please circle one answer.

   - Yes
   - No
   - Cannot remember

3. **Would you be committed to using a universal electronic health record introduced by the government if there was <u>NO</u> formal support, training or funding?**
   Please circle one answer.

   - Yes
   - No
   - Neither yes or no

4. **Would you be committed to using a universal electronic health record introduced by the government if formal support, training, and funding ARE provided to you?**
Please circle one answer.

- Yes
- No
- Neither yes or no

5. **What do you think are the ADVANTAGES of using electronic health records?**
You may circle multiple answers.
It's ability to:

- Provide integrated healthcare across different healthcare locations.
- Be accessed anytime and anywhere by healthcare professionals involved in the direct care of patients.
- Effectively evaluate the quality of the care provided.
- Efficiently calculate the cost of the care provided.
- Allow healthcare providers of different professions to communicate with each other.
- Save time on locating and retrieving health information and patient charts.
- Provide more than one copy of the same patient information at any given time.
- Nullify the difficulties that health professionals may have on reading each other's unique handwritings that may often be unintelligible.
- Determine who had access (an "electronic footprint") to which patient health information by requiring each user to be registered to the electronic health record.
- Provide security to sensitive health information through password authentication processes.
- Other advantages, please state below:
_____
_____
_____
_____

6. What do you think are the DISADVATANGES of using electronic health records?
You may choose multiple answers.

- Extra cost of additional resources such as money and time to train healthcare professionals to use electronic health records.
- Lack of acceptance by healthcare professionals to use electronic health records.
- Ongoing cost to maintain the required software and hardware to keep the electronic health record system up to date.
- Lack of autonomy and flexibility for healthcare professionals to record health records the way they want to rather than the set rigid structured format of the electronic health record.
- Potential threat of security breaches by hackers or malicious software that can access sensitive healthcare information from anywhere.
- Possibility of recording wrong health information due to operating the electronic system incorrectly.
- Healthcare providers can access healthcare information of patients who are not in their direct care.
- Non-healthcare providers who produce, maintain, and service the electronic health record system will have access to sensitive health information when working on the system.
- Other disadvantages, please state below:
  _____
  _____
  _____
  _____

7. Have you ever had any formal training on operating electronic health records before?
Please circle one answer.

- Yes, please state what was this training _____
- No

SECTION 2 OF 4: COMPUTER USAGE INFORMATION

8. Do you use a computer for work?
Please circle one answer.

- Yes
- No

9. On average, how much time do you spend using a computer for work each day?
Please write below and round your answer to the nearest half hour.

- _____ hours.

10. Do you use a computer for personal purposes?
Please circle one answer.

- Yes
- No

11. On average, how much time do you spend using a computer for <u>personal purposes</u> each day?
Please write below and round your answer to the nearest half hour.

- _____ hours.

12. What computer software are used in your day to day practice as a physiotherapist? For example: Gensolve Practice Manager, MedTech, Health Connect South, CRG Inteleviewer, Microsoft Calendar…etc.
Please write below all those you use.

- _____
  _____
  _____
  _____
  _____

SECTION 3 OF 4: CURRENT PRACTICING INFORMATION

13. As a New Zealand Registered Physiotherapist are you currently:
Please circle one answer.

- Practicing as a physiotherapist
- Not practicing as a physiotherapist (If so, **please do not answer Questions 14 – 16** and proceed to Question 17 in the next section, thank you)

14. If you are currently practicing as a physiotherapist, what type of work setting do you practice in?
Please circle one answer.

- Private sector
- Public sector
- Both sectors

15. If you are currently practicing as a physiotherapist, when recording patient notes, does your workplace use:
Please circle one answer.

- Electronic Health Records
- Paper-based Records
- A mix of both types

16. If you are currently working as a New Zealand registered physiotherapist, are you satisfied with the current health record information system that you are using in your day to day practice?
Please circle one answer.

- Yes
- No
- Neither yes or no

SECTION 4 OF 4: PHYSIOTHERAPIST SOCIODEMOGRAPHIC INFORMATION

17. What was the year that you <u>first registered</u> as a physiotherapist in New Zealand?
Please write your answer on the line below.

- _____

18. What was the year that you <u>graduated</u> with a physiotherapy qualification?
Please write your answer on the line below.

- _____

19. What is your highest education qualification?
Please circle one answer.

- Diploma
- Bachelor Degree
- Postgraduate Certificate
- Postgraduate Diploma
- Masters
- PhD
- Other, please state: _____

20. How many <u>total years</u> have you worked as a physiotherapist? This means to exclude the times where you <u>did not</u> practice physiotherapy but <u>have</u> a physiotherapy qualification.
Please write your answer on the line below.

- _____

21. What is your gender?
Please circle one answer.

- Male
- Female
- Other, please specify _____

22. What year were you born?

Please write your answer on the line below.

- _____

23. What is your ethnicity?

Please circle all that apply to you.

- New Zealand European
- Maori
- Asian
- Pacific Islander
- Other, please state _____

24. If you have any comments regarding the questions within this survey, please feel free to make any comments in the space provided below:

_____
_____
_____
_____
_____

This is the end of the survey. Thank you for your participation.

If you wish to have a summary of the survey findings sent to you electronically, please provide me with your email address in the given space below.

Email: _____